IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

AF

Applicant: Jiandong Huang et al.

Title: MULTIPLE NETWORK FAULT TOLERANCE VIA REDUNDANT NETWORK CONTROL

Docket No.: H16-26156 (256.044US1)
Filed: February 25, 2000
Examiner: Emerson Puente
Customer No.: 000128

Serial No.: 09/513010
Due Date: November 18, 2003
Group Art Unit: 2184

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MS Appeal Brief
Commissioner for Patents
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PATENT

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APPELLANTS' BRIEF ON APPEAL

Mail Stop Appeal Brief
Commissioner for Patents
P.O.Box 1450
Alexandria, VA 22313-1450

Sir:

This brief is presented in support of the Notice of Appeal filed with this paper, from the final rejection of claims 1-10 and 31-52 of the above identified application. The Final Office Action from which the Appellant hereby appeals was mailed on June 19, 2003.

The appeal brief is filed in triplicate. Authorization to charge Deposit Account No. 19-0743 in the amount of $330.00 to cover the fee for filing the appeal brief set forth in 37 C.F.R. § 1.17(c) is given. Please charge any additional required fees or credit overpayment to Deposit Account 19-0743. Appellant respectfully requests reversal of the Examiner's rejection of pending claims 1-10 and 31-52.

APPELLANTS' BRIEF ON APPEAL

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1. REAL PARTY IN INTEREST

The real party in interest of the above-captioned patent application is the assignee, Honeywell Corporation, having an office and place of business at 21111 North 19th Avenue, MS 2i29c3, Phoenix, AZ, 85027.

2. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to the Appellant which will have a bearing on the Board's decision in the present appeal.

3. STATUS OF THE CLAIMS

Claims 1-10 and 31-52 are pending in the present application, and stand under Final Rejection. Claims 1-9, 31-40, and 42-51 were rejected under 35 USC § 102(b) as being anticipated by Kohno (U.S. Patent no. 5,153,874). The remaining claims 10, 41, and 52 are dependent claims that also stand rejected, under 35 USC § 103(a) as being anticipated by Kohno (U.S. Patent no. 5,153,874) in view of Momona (U.S. Patent no. 6,434,117).

4. STATUS OF AMENDMENTS

The claims have not been amended in prosecution, and no amendments are pending.

5. SUMMARY OF THE INVENTION

The present invention provides in one embodiment a method of managing a computer network having redundant network connections. The state of each of a primary and redundant network connection between each pair of networked nodes is determined, and either the primary or redundant network connection is selected for sending and receiving data between each pair of nodes. The chosen path is selected independently for each pair of networked nodes, based on the determined network states for each pair of nodes.

6. ISSUES PRESENTED FOR REVIEW

Whether claims 1-9, 31-40, and 42-51 are unpatentable under 35 USC § 102(b) as being anticipated by Kohno (U.S. Patent no. 5,153,874) and whether claims 10, 41, and 52 are unpatentable under 35 USC § 103(a) as being anticipated by Kohno (U.S. Patent no. 5,153,874) in view of Momona (U.S. Patent no. 6,434,117).

7. GROUPING OF CLAIMS

Although each pending claim contains limitations that render it distinct from the remaining pending claims and is independently allowable for its own reasons, the arguments presented here are common to all pending claims. The claims are therefore appropriately considered as a single group for purposes of this appeal

8. ARGUMENT

Rejections Under 35 U.S.C. § 102(b)

1) The Applicable Law

To reject pending clams under 35 U.S.C. §102(b), disclosure must be shown in a single prior art reference of each element of the claim under consideration. *In re Dillon* 919 F.2d 688, 16 USPQ 2d 1897, 1908 (Fed. Cir. 1990) (en banc), cert. denied, 500 U.S. 904 (1991). It is not enough, however, that the prior art reference discloses all the claimed elements in isolation. Rather, "[a]nticipation requires the presence in a single prior reference disclosure of each and every element of the claimed invention, *arranged as in the claim*." *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added).

2) Issue: Whether claims 1-9, 31-40, and 42-51 are unpatentable under 35 USC § 102(b) as being anticipated by Kohno (U.S. Patent no. 5,153,874).

Kohno discusses a system in which the same signal is sent from each node over a pair of redundant transmission lines. This is described in the specification at col. 3, ln. 20-21, and illustrated by line drivers 2a and 2b having common inputs as shown in Figure 1. Kohno further compares signals received on the two transmission lines, and displays a result of the comparison such as via display control circuit 11. The displayed information is then used by an operator to estimate the occurrence of an abnormality in a repeater in one of the two lines (*see,* col. 3, ln. 51-53).

In contrast, the claims of the present invention describe a system and method in which either the primary or secondary network connection is selected for sending and receiving data between nodes, where the selection is made independently for each pair of nodes. As Kohno is not capable of sending a signal over only one line at a time and is not operable to select a line based on a specific pair of nodes desiring communication, Kohno does not anticipate this aspect of the pending claims.

Because Kohno requires sending all data through both lines (*see, e.g.* the Abstract, lines 1-3), and because Kohno is not operable to select a line over which to send data but is simply operable to notify a user of differences detected between the lines indicating an abnormality, Kohno does not anticipate the pending claims of the present invention.

Applicant has considered the comments provided in the Office Action (paper 9) regarding Applicant's arguments. The Office Action states that the claimed limitation "selecting either the primary network connection or the redundant network connection" is anticipated by Kohno, which is not capable of performing the recited selection or sending data over only one of its two connections.

The grammatical structure "either...or..." as employed in the above-cited section of the claims has the plain English meaning of indicating alternatives, where only one or the other of the alternatives is to be employed, and does not allow selection of both alternatives or no selection as is suggested in the Office Action. Either-or is defined as "an unavoidable choice or

exclusive division between only two alternatives", the term "Either" when used itself being defined as "one of two or more" (*see, Webster's Third New International Dictionary of the English Language Unabridged*, Springfield: Merriam-Webster, 1993).

Because the claim language clearly distinguishes these pending claims from the cited reference, reversal of the rejection of these pending claims 1-9, 31-40, and 42-51, and of the dependent claims 10, 41, and 52 that depend therefrom, is respectfully requested.

Rejections under 35 U.S.C. §103(a)

1) The Applicable Law

The references when combined must teach or suggest all the claim elements. M.P.E.P. § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir. 1991)). The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). To do that the Examiner must show that some objective teaching in the prior art or some knowledge generally available to one of ordinary skill in the art would lead an individual to combine the relevant teaching of the references. *Id.*

2) Issue: Whether claims 10, 41, and 52 are unpatentable under 35 USC § 103(a) as being anticipated by Kohno (U.S. Patent no. 5,153,874) in view of Momona (U.S. Patent no. 6,434,117).

Momona simply uses intermediate nodes in a serial communications chain to communicate between nodes not directly linked but linked via the serial chain. Momona fails to consider redundant networking, and fails to consider routing data through an intermediate node in a redundant network to provide communication between two nodes. Momona therefore fails to select a connection at all, much less selecting a connection from an originating node to an intermediate node and again selecting a connection from the intermediate node to a destination node.

Applicant further points out that there is no motivation for combination of the two references, and that the function of Momona resembles neither the function and purpose of Kohno nor the function and purpose of the present invention as taught in the pending claims and in the specification. Applicant therefore further objects to combination of these references as lacking motivation for combination, and for simply being a piecemeal combination of parts irrespective of function or purpose.

Motivation to combine the references was cited in a prior Office Action (paper 9) as being to "lessen distortion", which is alleged in the prior Office Action to be present in some unspecified location in Momona. The present invention does not adapt a simple repeater, to reduce distortion, but recites separate selection processes for selecting connections leading to and from an intermediate node for routing data in a network. The present invention is therefore not simply a repeater designed to reduce some sort of distortion, but employs intermediate nodes to enhance routing flexibility and network operability as various links between nodes fail. The cited motivation is therefore not applicable to the recited structure and function of the present invention.

For these reasons, Applicant believes these claims are patentable under 35 USC § 103(a), and are not anticipated by Kohno taken in view of Momona. Reversal of the rejection of these claims 10, 41, and 52 is therefore respectfully requested.

9. SUMMARY

Applicants believe the claims are in condition for allowance and request withdrawal of the rejections to the pending claims. It is respectfully submitted that the cited art neither anticipates nor renders the claimed invention obvious and that the claimed invention is therefore patentably distinct from the cited art. It is respectfully submitted that claims 1-23 should therefore be allowed, and reversal of the Examiner's rejections of pending claims 1-23 is respectfully requested.

Respectfully submitted,

JIANDONG HUANG et al.

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, MN 55402

Date Nov. 18 '03 By _____
John M. Dahl
Reg. No. 44,639

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Gina Uphus
Name

Gina Uphus
Signature

APPENDIX I

Pending Claims:

1. (Original) A method of managing the state of a computer network with redundant network connections, comprising:

determining the state of a primary network connection between each pair of networked nodes;

determining the state of a redundant network connection between each pair of networked nodes; and

selecting either the primary network connection or the redundant network connection for sending and receiving data between each pair of networked nodes, such that the network path selected to be used to communicate is selected independently based on the determined network states for each pair of networked nodes.

2. (Original) The method of claim 1, further comprising building a network status table that indicates results of determining the state of primary and redundant network connections between each pair of networked nodes.

3. (Original) The method of claim 2, wherein the network status table comprises data representing network status based on data received at a node from other network nodes.

4. (Original) The method of claim 3, wherein the data received at a node from other networked nodes comprises a diagnostic message.

5. (Original) The method of claim 4, wherein the data received at a node from other networked nodes comprises data representing the ability of the other nodes to receive data from other different network nodes.

6. (Original) The method of claim 2, wherein the network status table comprises data representing network status based on a node' s ability to send data to other nodes.

7. (Original) The method of claim 3, wherein the network status table further comprises data representing network status based on a node's ability to send data to other nodes.

8. (Original) The method of claim 1, wherein selecting the primary or redundant network connection for communication between each pair of networked nodes comprises:

selecting the primary network connection if the state of the primary network connection is determined to be operable; and

selecting the redundant network connection if the state of the primary network connection is determined to be inoperable.

9. (Original) The method of claim 1, wherein selecting the primary or redundant network connection for communication between each pair of networked nodes comprises:

selecting the primary network connection to transmit data if the state of the primary network connection is determined to be operable to transmit data;

selecting the primary network connection to receive data if the state of the primary network connection is determined to be operable to receive data;

selecting the redundant network connection to transmit data if the state of the primary network connection is determined to be inoperable to transmit data; and

selecting the redundant network connection to receive data if the state of the primary network connection is determined to be inoperable to receive data.

10. (Original) The method of claim 1, wherein selecting a connection for sending and receiving data between each pair of network nodes comprises selecting a connection for sending and receiving data from a first node to one or more connected intermediate nodes, and selecting a connection for sending and receiving data from an intermediate node to a second node.

11-30 (Cancelled)

31. (Original) The method of claim 1, wherein determining the state of connections between each pair of networked nodes comprises determination of whether each node in a pair of networked nodes can send data to the other node and can receive data from the other node in the pair.

32. (Original) A computer network interface, the interface operable to:

determine the state of a primary network connection between the network interface and the network interfaces of other network nodes;

determine the state of a redundant network connection between the network interface and the network interfaces of other network nodes; and

select either the primary network connection or the redundant network connection for communication with each of the other network nodes, such that the network connection selected is selected independently based on the determined network states for each other network node.

33. (Original) The computer network interface of claim 32, the interface further comprising a network status table that indicates results of the determination of the state of the primary and redundant network connections between the computer network interface and the network interfaces of other network nodes.

34. (Original) The computer network interface of claim 33, wherein the network status table comprises data representing network status based on data received at a node from other network nodes.

35. (Original) The computer network interface of claim 34, wherein the data received at a node from other networked nodes comprises a diagnostic message.

36. (Original) The computer network interface of claim 35, wherein the data received at a node from other networked nodes further comprises data representing the ability of the other nodes to receive data from other different network nodes.

37. (Original) The computer network interface of claim 33, wherein the network status table comprises data representing network status based on a node's ability to send data to other nodes.

38. (Original) The computer network interface of claim 34, wherein the network status table further comprises data representing network status based on a node's ability to send data to other nodes.

39. (Original) The computer network interface of claim 32, wherein selecting either the primary network connection or the redundant network connection for communication with each of the other network nodes comprises:

selecting the primary network connection if the state of the primary network connection is determined to be operable; and

selecting the redundant network connection if the state of the primary network connection is determined to be inoperable.

40. (Original) The computer network interface of claim 32, wherein selecting either the primary network connection or the redundant network connection for communication with each of the other network nodes comprises:

selecting the primary network connection to transmit data if the state of the primary network connection is determined to be operable to transmit data;

selecting the primary network connection to receive data if the state of the primary network connection is determined to be operable to receive data;

selecting the redundant network connection to transmit data if the state of the primary network connection is determined to be inoperable to transmit data; and

selecting the redundant network connection to receive data if the state of the primary network connection is determined to be inoperable to receive data.

41. (Original) The computer network interface of claim 32, wherein selecting a connection for sending and receiving data between each pair of network nodes comprises selecting a connection for sending and receiving data from a first node to one or more connected intermediate nodes, and selecting a connection for sending and receiving data from an intermediate node to a second node.

42. (Original) The computer network interface of claim 32, wherein determining the state of connections between each pair of networked nodes comprises determination of whether each node in a pair of networked nodes can send data to the other node and can receive data from the other node in the pair.

43. (Original) A machine-readable medium with instructions thereon, the instructions when executed on a computer operable to cause the computer to:

determine the state of a primary network connection between the network interface and the network interfaces of other network nodes;

determine the state of a redundant network connection between the network interface and the network interfaces of other network nodes; and

select either the primary network connection or the redundant network connection for

communication with each of the other network nodes, such that the network connection selected is selected independently based on the determined network states for each other network node.

44. (Original) The machine-readable medium of claim 43, the instructions further operable to cause a computer to create and maintain a network status table that indicates results of the determination of the state of the primary and redundant network connections between the computer network interface and the network interfaces of other network nodes.

45. (Original) The machine-readable medium of claim 44, wherein the created network status table comprises data representing network status based on data received at a node from other network nodes.

46. (Original) The machine-readable medium of claim 45, wherein the data received at a node from other networked nodes comprises a diagnostic message.

47. (Original) The machine-readable medium of claim 46, wherein the data received at a node from other networked nodes further comprises data representing the ability of the other nodes to receive data from other different network nodes.

48. (Original) The machine-readable medium of claim 44, wherein the created network status table comprises data representing network status based on a node's ability to send data to other nodes.

49. (Original) The machine-readable medium of claim 45, wherein the network status table further comprises data representing network status based on a node's ability to send data to other nodes.

50. (Original) The machine-readable medium of claim 43, wherein selecting either the primary network connection or the redundant network connection for communication with each of the other network nodes comprises:

selecting the primary network connection if the state of the primary network connection is determined to be operable; and

selecting the redundant network connection if the state of the primary network connection is determined to be inoperable.

51. (Original) The machine-readable medium of claim 43, wherein selecting either the primary network connection or the redundant network connection for communication with each of the other network nodes comprises:

selecting the primary network connection to transmit data if the state of the primary network connection is determined to be operable to transmit data;

selecting the primary network connection to receive data if the state of the primary network connection is determined to be operable to receive data;

selecting the redundant network connection to transmit data if the state of the primary network connection is determined to be inoperable to transmit data; and

selecting the redundant network connection to receive data if the state of the primary network connection is determined to be inoperable to receive data.

52. (Original) The machine-readable medium of claim 43, wherein selecting a connection for sending and receiving data between each pair of network nodes comprises selecting a connection for sending and receiving data from a first node to one or more connected intermediate nodes, and selecting a connection for sending and receiving data from an intermediate node to a second node.